

Kula™ — 3 M/E, 2 M/E, 1 M/E and 1 M/E UHD Production Switchers



Data Sheet

Kula is a production switcher designed for the professional broadcast and AV markets. It offers a powerful feature set in a compact system for easy installation and operation.

Kula is available as a 1, 2 and 3 M/E switcher with the capability of operating in HD, SD, 1080p and UHD. It has a 2U mainframe and a choice of seven control panels including a convenient 19" wide panel ideal for mobile and flyaway productions.



Kula is available as four product options:

1. 3 M/E HD switchable to 1 M/E UHD capability
2. 2 M/E HD/SD switchable to 1M/E UHD capability
3. 1M/E HD/SD
4. 1M/E UHD

Main features

Kula has been designed for the likes of Houses of Worship, regional news, sports, events, conferences and education. It is the perfect solution for each environment offering a huge range of features. Kula maybe a compact production switcher but it packs a huge punch.

Powerful M/E

Kula offers the most powerful M/E in the market. Each M/E has four keyers with resize engines including split dual tile mode offering 8 key layers, a dedicated animated clip transition called a Mav Trans and an A/B background.

Additional sub M/E functionality*

Kula offers additional M/Es to the standard M/E functionality. With 2 keys that can be assigned to a 2.5D DVE resize engine offering an extra 3 key layers plus an A/B background for creative productions without burning m/e resources.

Assignable downstream keyers

Four floating DSKs are available within Kula. They can be independently assigned to any output or used downstream of any m/e. They too have resize engines so could essentially make eight key layers.

Capability of delivering multiple outputs

Kula can output multiple standards simultaneously using Kahuna technology FormatFusion 3*, opening up more functionality and delivery of HD, SD, 1080p and 4K.

Multiviewer matching Kahuna's high performance

Kula's internal multiviewer offers flexibility with configurable eight heads and 28 tiles to build preview windows to prepare for professional live productions.

Largest Clipstore

The Kula production switcher has the largest internal clipstore in its class. Kula provides ten clipstore outputs with 16GB of ram which gives up to two minutes of uncompressed HD video.

Large input and output

Considering Kula is a 2RU mainframe it still offers huge amount of input/outputs. With up to 36 inputs and 12 assignable outputs makes Kula a very practical production switcher. For extra flexibility Kula has an extra six bi-directional ports assignable to any input or output.

Supports mixed SD/HD environments*

If legacy material is SD and your production is HD, Kula deals with both standards easily and effectively. Using FormatFusion 3, an award winning internal conversion technology, Kula converts the standard automatically freeing up precious time for your operator to focus on their creative production.

Will deliver UHD and HD in parallel

Up to 3Gbps all functions are supported without any compromises. UHD uses quad link and 2SI and is available on a 2 M/E Kula at the 1 M/E UHD specification offering dedicated UHDkeys, UHD transitions and UHD clipstores.

Control surface that supports direct control and Macro allocation

Kula has a range of panels in the 1, 2 and 3 M/E range. It offers up to 16 or 24 crosspoint buttons, separate key control and transition operations and assignable macro buttons with OLED displays for crystal clear identification. For total flexibility Kula can connect to up to eight extra modules to the panel from the Kahuna Maverik modular panel range.

* Available on 1 and 2 M/E Kula systems

www.s-a-m.com

3 M/E Specifications

- 3 M/E (1 M/E / 2 M/E / program / preview) production switcher
- 2 Rack Unit mainframe supporting:
- 36 Inputs
- 12 Assignable outputs
- 6 Input or output bi-directional ports
- 5 Keyers per Mix Effect
 - 4 Full effects keyers with lin/luma
 - 4 assignable DVE engines (will give 8 independent boxes)
 - Chroma keys available on all keys
 - Transition keyer with dedicated clipstores for key & fill
 - Mask generator per keyer
 - Separate wipe generator
 - Matte generator
- Large internal clipstore with 10 outputs holding 2 minutes of uncompressed HD video and audio content that is totally routable
- 4 Floating resizing down stream keyers / mixing aux outputs without using M/E or sub M/E's.
- Fully flexible internal multiviewer with configurable 8 heads and 28 tiles
- Control
 - 66 GPIO's
 - 2 x RS 422 Ports
 - 3 Ethernet ports for control Panel and TCP/IP protocols
 - USB Ports for user/clip/system files import, export and back up
- New control panel design with clear OLED's, RGB push buttons and shaft encoders for quick and granular control. Sophisticated macro recall and edit capability
- Clearly labelled control panel with separate mnemonics for source, key and macro names Instant delegation buttons for macro's or key and aux bus control
- T-bar with direction strip indicators
- 16 and 24 crosspoint button panel models available for easy operation
- Can be expanded by connecting other Kahuna Maverik modules

2 M/E Specifications

- 2 M/E (1 M/E / program / preview) production switcher
- 2 Rack Unit mainframe supporting:
- 36 Inputs
- 12 Assignable outputs
- 6 Input or output bi-directional ports
- 5 Keyers per Mix Effect
 - 4 Full effects keyers with lin/luma
 - 4 assignable DVE engines (will give 8 independent boxes)
 - Chroma keys available on all keys
 - Transition keyer with dedicated clipstores for key & fill
 - Mask generator per keyer
 - Separate wipe generator
 - Matte generator
- 2 Sub M/Es background with 2 keyers*
 - 2 Lin/luma keys
 - 1 assignable 2.5D DVE engine per Sub M/E
 - Chroma keys available on all keys
 - Use on any output or use within any M/E for more keying power
- Large internal clipstore with 10 outputs holding 2 minutes of uncompressed HD video and audio content that is totally routable
- 4 Floating resizing down stream keyers / mixing aux outputs without using M/E or sub M/E's

- 8 Channels of FormatFusion 3 assignable of any input or output.
- Fully flexible internal multiviewer with configurable 8 heads and 28 tiles
- Control
 - 66 GPIO's
 - 2 x RS 422 Ports
 - 3 Ethernet ports for control Panel and TCP/IP protocols
 - USB Ports for user/clip/system files import, export and back up
- New control panel design with clear OLED's, RGB push buttons and shaft encoders for quick and granular control. Sophisticated macro recall and edit capability
- Clearly labelled control panel with separate mnemonics for source, key and macro names Instant delegation buttons for macro's or key and aux bus control
- T-bar with direction strip indicators
- 16 and 24 crosspoint button panel models available for easy operation
- Can be expanded by connecting other Kahuna Maverik modules

* Sub M/Es functionality shared to be either Sub M/E's or FormatFusion 3 engines. The 2 M/E Kula will support UHD, however at the same feature specification as the 1 M/E UHD Kula.



3 M/E 16 crosspoint control panel



2 M/E 16 crosspoint control panel



3 M/E 24 crosspoint control panel



2 M/E 24 crosspoint control panel

1 M/E Production Switcher

- 2 Rack Unit
- 18 Inputs
- 12 Assignable outputs
- Mix / Effect supports 4 full effects keyers with lin/luma, 4 assignable DVE engines (will give 8 independent boxes)
 - Chroma keys available on all keys
 - Transition keyer (Mav Trans) with dedicated clipstores for key & fill
 - Mask generator per keyer
 - Separate wipe generator
 - Matte generator
- Sub M/E background with 2 keyers* both lin/luma key
 - 1 assignable 2.5D DVE engine (Will give 2 independent boxes)
 - Chroma keys on any output or use with the M/E for more keying power
 - RGB colour correction
- Large internal clipstore with 10 outputs holding 2 minutes of uncompressed HD video and audio content that is totally routable
- 4 Floating resizable down stream keyers for main or aux outputs
- 4 Channels of FormatFusion 3 assignable of any input or output*
- Fully flexible internal multiviewer with 4 heads and 16 tiles
- Control
 - 66 GPI/O's, 2 x RS 422 Ports, 3 Ethernet ports for Control Panel and TCP/IP protocols
 - USB Ports for User/Clip/System files Import, Export and Back up
- 1 M/E control panel with a choice of 16 or 24 crosspoint buttons. Designed with clear OLED's, RGB push buttons and shaft encoders for quick and granular control. Sophisticated macro recall and edit capability
- Clearly labelled control panel with separate mnemonics for source, key and macro names

- Instant delegation buttons for macro's or key and aux bus control.
- T-bar with direction strip indicators
- Can be expanded by connecting other Kahuna Maverik modules

1 M/E UHD Specifications

- 2 Rack Unit
- 10 x UHD inputs (quad link or 2SI)
- UHD Program output
- UHD Preview output
- UHD Clean output
- 2 HD down converted assignable outputs
- Mix / Effect supports
 - 2 Full effects keyers with Lin/ luma
 - Chroma key
 - Separate wipe generator
 - Matte generator

- Large Internal clipstore with 4 outputs holding 30 seconds of uncompressed UHD video and audio
- 2 Channels of FormatFusion3 assignable of any input of output.
- 1 M/E control panel with a choice of 16 or 24 crosspoints and clear OLED's
- RGB Push buttons and shaft encoders for quick and granular control, sophisticated macro recall and edit capability
- Clearly labelled control panel with separate mnemonics for source, key and macro names, instant delegation buttons for macro's or key and aux bus control
- T-bar with direction strip indicators
- Can be expanded by connecting other Kahuna Maverik Modules



1 M/E 19" rack mount control panel



1 M/E 16 crosspoint control panel



1 M/E 24 crosspoint control panel

Ordering Information

Product	Description	Order Code
3 M/E Kula Switcher - 24	3 M/E 24 Xpt Panel, 2U Mainframe with 3 M/Es. Switchable to 1M/E UHD 1/4K	9679375
3 M/E Kula Switcher - 16	3 M/E 16 Xpt Panel, 2U Mainframe with 2 M/Es. Switchable to 1M/E UHD 1/4K	9679305
2 M/E Kula Switcher - 24	2 M/E 24 Xpt Panel, 2U Mainframe with 2 M/Es. Switchable to 1M/E UHD 1/4K	9679370
2 M/E Kula Switcher - 16	2 M/E 16 Xpt Panel, 2U Mainframe with 2 M/Es. Switchable to 1M/E UHD 1/4K	9679300A
1 M/E Kula Switcher - 19	19" 1 M/E 16 Xpt Panel, 2U Mainframe with 1 M/E	9679320A
1 M/E Kula Switcher - 16	1 M/E 16 Xpt Panel, 2U Mainframe with 1 M/E	9679310A
1 M/E UHD Kula Switcher	1 M/E 16 Xpt Panel, 2U Mainframe with 1 UHD M/E	9679330A

Mainframe Only	Description	Order Code
2 M/E Kula – MF	2U Mainframe with 2 M/Es	9679110A
1 M/E Kula – MF	2U Mainframe with 1 M/E	9679200A
1 M/E UHD Kula – MF	2U Mainframe with 1 UHD M/E	9679210A

Panel Only	Description	Order Code
Kula Panel 2 M/E - 24	2 M/E 24 Xpt Panel	9679350A
Kula Panel 2 M/E – 16 - 2	2 M/E Panel 16 Xpt	9679340A
Kula Panel 1 M/E - 24	1 M/E 24 Xpt Panel	9679170A
Kula Panel 1 M/E – 16	1 M/E Panel 16 Xpt	9679070A
Kula Panel 1 M/E – 19	1 M/E Panel 16 Xpt fitting in 19" rack frame	9679080A



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Kula mainframe

Kula Technical Specification

**3 M/E / 2 M/E / 1 M/E UHD
Kula Mainframe**

Specifications

TV Standards

2.97Gbps Video Standards (1080p)

2.97Gbps Video Standards (1080p)
1080p 59.94Hz SMPTE-424M
1080p 59.94Hz SMPTE-425M/Level A
1080p 59.94Hz SMPTE-425M/Level B
1080p 50Hz SMPTE-424M
1080p 50Hz SMPTE-425M/Level A
1080p 50Hz SMPTE-425M/Level B

1.485Gbps Video Standards (HD)

1080i 60Hz SMPTE- 274M(4),-292M(D)
1080i 59.94Hz SMPTE-274M(5), -292M(E)
1080i 50Hz SMPTE- 274M(6), -292M(F)
1035i 60Hz SMPTE -260M,- 292M(A)
1035i 59.94Hz SMPTE-260M,-292M(B)
1080p 30Hz sF
1080p 29.97Hz sF
1080p 25Hz sF
1080p 24Hz sF
1080p 23.976Hz sF
1080p 30Hz SMPTE- 274M(7) -292M(G)
1080p 29.97Hz SMPTE- 274M(8) -292M(H)
1080p 25Hz SMPTE- 274M(9) -292M(I)
1080p 24Hz SMPTE- 274M(10) -292M(J)
1080p 23.976Hz SMPTE - 274M(11)
-292M(K)
720p 60Hz SMPTE- 296M(1), -292M(L)
720p 59.94Hz SMPTE- 296M(2), -292M(M)
720p 50Hz SMPTE- 296M(2), -292M(M)

270Mbps Video Standards (SD)

576i 16:9
576i 4:3
480i 16:9
480i 4:3

Reference

Analog genlock High definition tri-level syncs signal or SD 1V B and B.

Mainframe

Video Signal Inputs

36, HD/SD-SDI HD/SD/1080p
(270Mbps / 1.485Gbps
/ 2.97Gbps).

Serial digital interface As REC601/ SMPTE 292M / SMPTE424M via BNC connectors. Genlock reference 4 off Analog Sync (loop A and B through).

Video Signal Outputs

12 HD/SD-SDI Assignable via BNC connectors

Video Bi-Directional

Ports HD/SD/1080p
(270Mbps / 1.485Gbps / 2.97Gbps).

Serial digital interface As REC601/ SMPTE 292M / SMPTE424M via BNC connectors

6 Bi-Directional Ports

Genlock Genlock reference 2 off Analog Sync via BNC Connectors

Control Interfaces

66 GPI Tally/GPO Outputs Assignable GPI / GPO Isolated contact closures via 3 x 25 way D Type. Assignable as GPI or GPO.

16 10/100/1000 baseT 3 x RJ45 Ethernet connectors fixings.

2 RS422 control ports TDB

2 x USB

Power

Kula mainframe Auto sensing 100-250 VAC Power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2 x 13A IEC - 320-C14 socket.

Power Consumption <400W

Temp range 41 to 104 ° F, 5 to 40° C non condensing operating

Mainframe Mechanics

2 rack unit
Height 87mm, 3.42"
Depth 604.8mm, 23.81"
Weight Approx 14Kg ~ 30.3lb

Kula Technical Specification

1 M/E Kula Mainframe

Specifications

TV Standards

2.97Gbps Video Standards (1080p)

2.97Gbps Video Standards (1080p)
 1080p 59.94Hz SMPTE-424M
 1080p 59.94Hz SMPTE-425M/Level A
 1080p 59.94Hz SMPTE-425M/Level B
 1080p 50Hz SMPTE-424M
 1080p 50Hz SMPTE-425M/Level A
 1080p 50Hz SMPTE-425M/Level B

1.485Gbps Video Standards (HD)

1080i 60Hz SMPTE- 274M(4),-292M(D)
 1080i 59.94Hz SMPTE-274M(5), -292M(E)
 1080i 50Hz SMPTE- 274M(6), -292M(F)
 1035i 60Hz SMPTE -260M,- 292M(A)
 1035i 59.94Hz SMPTE-260M,-292M(B)
 1080p 30Hz sF
 1080p 29.97Hz sF
 1080p 25Hz sF
 1080p 24Hz sF
 1080p 23.976Hz sF
 1080p 30Hz SMPTE- 274M(7) -292M(G)
 1080p 29.97Hz SMPTE- 274M(8) -292M(H)
 1080p 25Hz SMPTE- 274M(9) -292M(I)
 1080p 24Hz SMPTE- 274M(10) -292M(J)
 1080p 23.976Hz SMPTE - 274M(11) -292M(K)
 720p 60Hz SMPTE- 296M(1), -292M(L)
 720p 59.94Hz SMPTE- 296M(2), -292M(M)
 720p 50Hz SMPTE- 296M(2), -292M(M)

270Mbps Video Standards (SD)

576i 16:9
 576i 4:3
 480i 16:9
 480i 4:3

Reference

Analog genlock High definition tri-level syncs signal or SD 1V B and B

Mainframe

Video Signal Inputs

18, HD/SD-SDI HD/SD/1080p
 (270Mbps / 1.485Gbps / 2.97Gbps)

Serial digital interface As REC601/ SMPTE 292M / SMPTE424M via BNC connectors. Genlock reference 4 off Analog Sync (loop A and B through)

Video Signal Outputs

6 HD/SD-SDI Assignable via BNC connectors

Video Bi-Directional

Ports HD/SD/1080p
 (270Mbps / 1.485Gbps / 2.97Gbps)

Serial digital interface As REC601/ SMPT 292M / SMPTE424M via BNC connectors

6 Bi-Directional Ports

Genlock Genlock reference 2 off Analog Sync via BNC Connectors

Control Interfaces

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16 10/100/1000 baseT 3 x RJ45 Ethernet connectors fixings

2 x RS422 control ports

2 x USB

Power

Kula mainframe Auto sensing 100-250 VAC Power supply 50/60 Hz nominal. Two fully independent hot swappable PSU modules, with separate mains power feeds via 2 x 13A IEC – 320-C14

Power Consumption <400W

Temp range 41 to 104 ° F, 5 to 40° C non condensing operating

Mainframe Mechanics

2 rack unit
 Height 87mm, 3.42"
 Depth 604.8mm, 23.81"
 Weight Approx - 14Kg ~ 30.3lb

Kula Technical Specification

Kula Control 3 M/E 16 Crosspoint Panel

Width	834 mm ~ 32.83"
Depth	419.1mm ~ 16.5"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 11Kg ~ 24.23lb

Kula Control 3 M/E 24 Crosspoint Panel

Width	994mm ~ 39.13"
Depth	419.1mm ~ 16.5"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 14.2Kg ~ 31.29lb

Kula Control 2 M/E 16 Crosspoint Panel

Width	834 mm ~ 32.83"
Depth	279.6mm ~ 11"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 7.5Kg ~ 16.52lb

Kula Control 2 M/E 24 Crosspoint Panel

Width	994mm ~ 39.13"
Depth	279.6mm ~ 11"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 9.2Kg ~ 20.28lb

Kula Control 1 M/E 16 Crosspoint Panel

Width	834 mm ~ 32.83"
Depth	139.7mm ~ 5.5"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 3.5Kg ~ 7.72lb

Kula Control 1 M/E 24 Crosspoint Panel

Width	994mm ~ 39.13"
Depth	139.7mm ~ 5.5"
Height	64.7mm ~ 2.55" (123.3 mm ~ 4.86" total height including T-Bar)
Weight	Approx - 5Kg ~ 11.02lb

Kula Control 1 M/E Panel (Rack Mount)

Width	482.6mm ~ 19"
Depth	221.5mm ~ 8.72"
Height	87.9 mm ~ 3.46 " (146.5 mm ~ 5.79 " total height including T-Bar)
Weight	Approx - 3.6Kg ~ 7.14lb

Connectors Kula 1/ME and 1M/E Rack Mount

Mainframe communications	2 x 16 10/100/1000 baseT	3 x RJ45 Ethernet connectors fixings
Internal Panel Connection		6 x RJ45 Ethernet connectors fixings. Connection to other MAV modules. NOT Ethernet connections, must be direct to MAV modules. Do Not use network switches or hubs. CAT5 or above cables - crossover cables are Not suitable
	2 x USB 2 Ports	
	1 x Monitor connection to local touchscreen.	
PSU		2x Fully independent external PSU modules with separate mains power feeds via 2x 10A IEC leads.
Output from each PSU		12V DC 100W via Kycon KPPX 4 Pin or Compatible connectors to the KPP control surface. 2 supplied as standard, One PSU provides Dual Redundancy.

